

Fourth Grade Extension Activities



Sound Energy

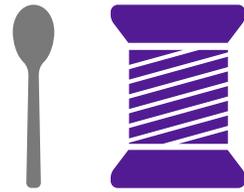
Sound is created when something vibrates. It might be the vocal cords in your throat when you speak, the surface of a drum when you bang on it, or the strings on the inside of a piano. **Sound needs matter** to travel through because the matter molecules vibrate and bounce into each other to carry the sound from its source to your ear.

Big Ben:

See which state of matter is most efficient for transferring sound.

Materials:

- String
- A spoon
- Scissors



Try This:

1. Cut two pieces of string to about 12 inches in length each.
2. Tie the strings to the spoon.
3. Wrap one string around your left index finger and the other around your right index finger. Hold the strings so that the spoon hangs in between your hands.
4. Gently bang the spoon against a hard surface like a table. Describe the sound you hear.
5. Now, put your fingers in your ears and gently bang the spoon again. What do you notice about the sound this time?

Want to Know More?:

Sound travels when molecules in matter vibrate and bounce into one another. Vibrations can travel through solids like the string much faster than through gases like the air because the molecules in a solid are close together. In the first experiment, the sound travels from a solid (the spoon) through a gas (the air). In the second experiment, the sound travels through all solid materials (spoon, string, and fingers). Because of this fact, you should notice that the sound is much louder when your fingers are in your ears. Sound will not travel in the vacuum of space because there is no matter for the sound energy to travel through. This is one of the major differences between sound energy and light energy.

Make a DIY Phone Speaker:

Amplify the sound your phone makes with this DIY speaker.



Try This:

To build your own phone speaker, follow the instructions here:

<https://www.kiwico.com/diy/Science-Projects-for-Kids/3/project/DIY-Phone-Speaker/2758>

Experiment:

If you don't have these materials on hand, experiment by putting your phone in differently shaped bowls or cups. Is there one shape or material that works best? Where is the sound loudest?

Want to Know More?:

These phone speakers work by directing the sound through a smaller area and focusing it on a target, similar to how a cheerleader holds a megaphone so that more people can hear them.